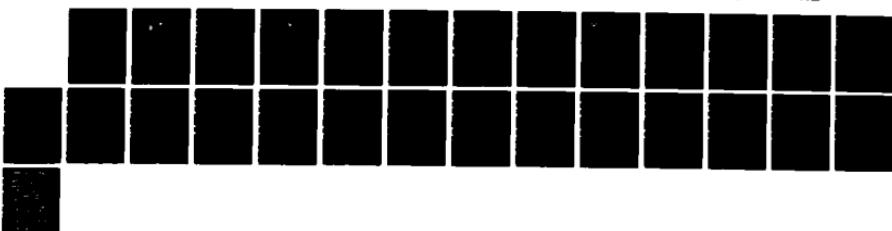


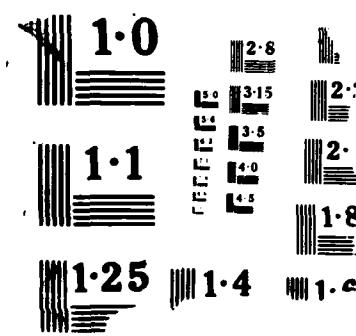
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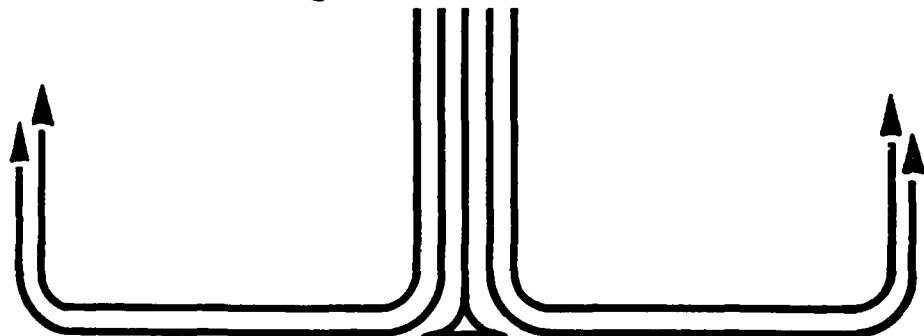


STUDENT REPORT

THE SANDY ROLE IN PRESENT AND FUTURE
COMBAT SEARCH AND RESCUE MISSIONS

MAJOR WILLIAM L. HOLLAND 88-1255

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REPORT NUMBER 88-1255

TITLE THE "SANDY" ROLE IN PRESENT AND FUTURE COMBAT SEARCH AND RESCUE MISSIONS

AUTHOR(S) MAJOR WILLIAM L. HOLLAND, USAF

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Submitted to the faculty in partial fulfillment of requirements for graduation.

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PREFACE

DOCTRINE: AEROSPACE RESCUE AND RECOVERY. A specialized task performed by aerospace forces to rescue downed combat aircrrew personnel. These actions preserve and return to duty critical combat resources, deny an enemy a possible source of intelligence, and contribute to the morale and motivation of combat aircrrews (3:3-7).

In the future there may exist areas of interest to the U.S. where military involvement may warrant a combat Search and Rescue (SAR) mission. The threat to that mission will determine the resources and tactics to be used. Historically, this mission has been conducted by a SAR task force (SARTF). A SARTF is "all the forces that are committed to a SAR operation to search for, locate and rescue personnel, including those elements assigned to protect the rescue vehicles from enemy interdiction" (4:2). "The SARTF may be a sizable force or simply a single rescue helicopter, depending on the threat and the friendly forces available. Although helicopters may operate independently, SAR capabilities are significantly improved when other agencies help out" (1:9-2). "SANDY" is the name traditionally given to the aircraft dedicated to support a combat SAR mission by rescue escort (RESCORT) which includes locating, authenticating and protecting the survivor, and escorting, protecting and directing the helicopter assets into and out of the SAR area.

A SAR effort is a demanding situation and there is no "standard" SAR operation. RESCORT tactics and techniques were developed during the SEA conflict for A-1 and A-7 aircraft. Because of its proven operational suitability and capability to perform the close air support (CAS) mission, the A-10 has the SAR role previously performed by the A-7 and A-1 aircraft (5:166).

This research paper looks at the history and present day "Sandy" mission in SAR along with trends which may positively or adversely affect this mission in the future.

ABOUT THE AUTHOR

Major William L. Holland, currently a student at Air Command and Staff College, is a senior pilot with over 1,800 flying hours in the A-10 close air support aircraft. He is a graduate of East Carolina University where he received his commission through the ROTC program in 1975. He also holds a Master's Degree from the University of Northern Colorado. After entering active duty in 1976, he later attended undergraduate pilot training at Reese AFB, Texas graduating in 1980. He has held numerous positions at squadron, wing, and sub-unified command levels.

Major Holland is an acknowledged expert in the A-10 aircraft and its numerous missions. An outstanding graduate from the Fighter Weapons Instructor Course, he has been an instructor in all aspects of the A-10 and has performed in Search and Rescue exercises in the Republic of Korea, the Phillipines and the U.S..

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REPORT NUMBER 88-1255

AUTHOR(S) MAJOR WILLIAM L. HOLLAND, USAF

TITLE THE "SANDY" ROLE IN PRESENT AND FUTURE COMBAT
SEARCH AND RESCUE MISSIONS

I. Purpose: To investigate the validity of the rescue escort (SANDY) mission for USAF tactical aircraft in future military operations.

II. Problem: There are areas of interest to the U.S. where military involvement may warrant a combat Search and Rescue (SAR) mission. The threat to that mission should determine the resources and tactics to be used. Does there still exist a need for trained and dedicated Sandy assets for possible inclusion in a SAR task force?

III. Data: Search and Rescue has historically been, and is presently, a part of USAF doctrine. There has been an increase in the number and sophistication of weapons that could be targeted against SAR assets in many parts of the world. A theater commander would, therefore, have to seriously consider the risk to those assets compared with benefits gained by the mission. Also, these assets are becoming increasingly scarce. There is, however, an increasing trend away from bi-polarization and towards more third world involvements. These areas of interest are less threatening to a SAR task force.

CONTINUED

IV. Conclusions: The U.S. is more likely to be militarily involved in areas where a SAR task force, to include Sandy aircraft, would be viable. In order to prevent a repeat of history when the U.S. entered a military conflict unprepared, Sandy assets should continue to be specified and training should be increased and emphasized.

V. Recommendations: The USAF continues to indorse Search and Rescue as a viable doctrine by its inclusion in Air Force Manual 1-1. However, without appropriate assets the doctrine cannot be transformed into an accomplishable mission. Therefore, the USAF should investigate the viability of SAR task force training. If this investigation identifies a lack of available assets, USAF should develop a contingency plan to provide for this shortfall.

Chapter One

HISTORY OF SAR AND PRESENT IDEAS

The search and rescue task force can be traced to WWII. Float planes were used in 1939 by the Germans to recover a number of British airmen from the North Sea after the Luftwaffe attacked a bomber force (2:4). The British had lost more than twenty-five percent of their experienced pilot corps by the late summer of 1940 and could no longer afford the loss of trained aviators. Therefore, a joint RAF/Royal Navy rescue organization was formed to locate and retrieve downed airmen (2:5).

Much of the flying done in WWII was over water. Bombers and transports flew across the Atlantic to various stations in Europe and Africa. To reach targets on the European continent, combat aircraft crossed the English Channel, the North Sea, the Mediterranean, or the Adriatic. After their missions over Europe, these aircraft, often battle-damaged, returned over water before landing at their home bases. Rescue from the European landmass remained highly improbable as long as German troops occupied most areas. In the Pacific theater aerial combat was over or near the water. The U.S. Navy contributed immensely to the rescue efforts throughout the Pacific.---The concepts and capabilities of rescue were, therefore, developed for water recovery. But, aircraft developed during the decades prior to the war proved suitable for this mission (2:6).

Necessity made water rescue the primary concern in the Pacific theater. However, rescue from the jungles and mountains of the landmasses there was beginning to receive more interest. A unit was formed specifically to go out overland to crash sites and recover victims. This procedure could take days or even weeks and therefore necessitated the need for improved land rescue capabilities. This led to the introduction of the helicopter for this role. Although the helicopter entered the war too late to have a significant impact, the implications for future rescue were immense (2:7).

Post-WWII rescue units which were under different theater commanders were finally united into one organization. In 1946, the Air Rescue Service was formed and assigned to the Air Transport Command (13:8). Then, with the United Nations' involvement in the Korean War, the helicopter was introduced and demonstrated its importance to the SAR mission. As deep interdiction targets were struck, helicopters in forward operating positions provided a unique capability to perform aircrew recoveries behind enemy lines (2:12,13). "The Korean War ended on July 27, 1953. The Air Rescue Service survived its baptism under fire and emerged with an enviable reputation" (2:14).

However, at this same time the French, involved militarily in Vietnam, were also using SAR procedures. "Realizing the vulnerability of the slow moving helicopters, the French took certain precautions.---Whenever possible, French pilots flew along secure roadways to their destinations. And, if available, fighters escorted the choppers over hostile territory" (2:14,15). As the U.S. became involved, it was soon discovered that the unique environment of Southeast Asia amplified the problems with equipment and tactics used by the Air Rescue Service. But the innovations, courage and spirit of the rescue forces overcame the difficulties (2:18). "The required tactics differed according to the location of the survivor, the nature of the terrain, enemy defenses, and the technological state-of-the-art in rescue at the time of the shoot down" (2:31).

"Doctrinal considerations made it difficult to identify a role for the Air Rescue Service in Southeast Asia.--- With no official wartime mission, the ARS did very little, if any, planning for a combat role" (2:34).

In South Vietnam political considerations also hindered the early involvement of rescue units. The U.S. role in combat was semi-covert and aircrews were supposedly conducting training missions only. The presence of regular search and rescue forces, however, complete with helicopters and HU-16 amphibians, would have advertised the existence of air operations with a casualty potential far greater than that to be expected in the course of normal flight training (2:37).

However, as U.S. military involvement continued to grow, so did the obvious need for adequate rescue resources. The issue was solved by the Joint Chiefs of Staff in 1964 when they assigned the SEA rescue mission to the Air Force, which promptly acted. "The first large-scale search and rescue effort of the Indochina war took place on November 18 and 19, 1964, and involved Air Force, Navy and Air America aircraft" (2:54). C-123s, HU-16s, A-1Es, F-105s, F-100s, HH-43s, H-34s, and T-28s were all used during this two day rescue attempt (2:54,55).

Helicopters, because of their slow speed and the mechanical complexity of the gearing in the exposed rotor system, have always been vulnerable to antiaircraft and small arms fire. Initially ill-prepared to meet the demands of aircrew rescue in Southeast Asia, rescue personnel had to develop tactics and doctrine. It was during this time that the Search and Rescue Task Force evolved.

In late 1964, due to the limitations of the HH-43 helicopter, Air Rescue Service units were not providing dependable aircrew recovery.---Nevertheless, it was in this period that HU-16 control ships, HH-43 helicopters, and A-1 rescue escort aircraft began working together to form the rescue task force (2:62,63).

Several different fighter aircraft were used throughout the war for the rescue escort role. The A-1 was consistently the primary escort aircraft. But with the U.S. involvement moving towards Vietnamization of the Air Forces, the A-1s were transferred to the South Vietnamese, and the A-7 took over the mission. Throughout the war, changes in enemy capabilities were met by improved tactics, doctrine, and equipment used by the rescue forces. "Most of the time, planning, skill, tactics, and equipment, combined with raw courage of the men, pulled rescue forces through the most precarious situation" (2:71). "By 1966, the dismal days that saw air operations conducted without effective rescue forces had passed. A downed aircrew, depending on where he was located, could look forward to at least a one-in-three chance of rescue" (2:77). Rescue efforts generally took precedence over most other missions.

Col. William M. Harris, commander of the 37th ARRS in 1971 and 1972, noted, "During my tour rescue efforts have called upon every conceivable military resource as well as--- Air America, special ground teams, clandestine operations, frogmen, aircraft carriers, tanks, and so on. There is no limitation on tactics or concepts to be employed to effect a rescue" (2:96).

As the Vietnam War came to a close, the Air Rescue Service left Southeast Asia with a super record of mission accomplishments. "The helicopters rescued 93 percent of the crews---they went after, more than 50 percent of those downed behind enemy lines" (1:155). The other assets that made up the SAR task forces also established a fine legacy. The A-1, which eventually gave way to the newer, faster A-7, was part of the initial cadre of the SAR task force. The A-7, even though it was a more sophisticated aircraft, had drawbacks in the Sandy role. Primarily, the lack of loiter time had to be overcome by air refueling. Also, the higher airspeeds made it less vulnerable to enemy defenses, but at the same time made it more difficult to escort the slower helicopters.

Still, the A-7 served with distinction in the overall rescue effort.

Many changes in equipment, weapons, and tactics have occurred in the years following Vietnam. The A-10 has replaced the A-7 as the primary close air support aircraft. Though in comparison the A-10 may appear to be a regression in applied technology, it is a combination of the best characteristics of the A-1 and A-7 for use in the SAR task force mission. Loiter time, range, air refueling, weapons load, speed and survivability are all qualities possessed by the A-10 that make it most suitable for the Sandy role.

Chapter Two

TODAY'S SAR FORCES-WHO ARE THE PLAYERS?

As we saw in the previous chapter, many different assets can be, and have been, used in a SAR task force. The primary players, however, are those essential to almost every combat rescue effort. Those forces today would be the helicopter and the escort, or Sandy.

The Air Force has tasked the Military Airlift Command (MAC) with the overall responsibility for combat rescue. One of the missions of MAC's 23rd Air Force is to equip, train, and manage assigned forces for this specialized task. The aircraft used by 23rd AF for combat SAR include HC-130s, as well as light and heavy lift helicopters (6:1). Subordinate units under 23rd AF are assigned to locations throughout the world as well as to their primary units located in the U.S. This deployment allows for more responsive peacetime rescue efforts and, in case of a military conflict, for more rapid involvement by these forces.

The escort forces, as discussed earlier, have evolved through the years from the primary close air support aircraft of the time. Today, this aircraft is the A-10 which, is the only aircraft presently designated in the Tactical Air Forces (TAF) to do the SAR mission in the Sandy role. Multi-Command Manual 51-50 designates the A-10 units with the task of training pilots in the SAR mission and states the particular requirements for this training. Like the 23rd AF units, A-10 units are located in the continental U.S., Europe, Alaska, and the Pacific. However, only eight A-10 squadrons throughout the TAF are designated to train for SAR as specialized tasking. The European units are not tasked to train for this mission.

Assets from 23rd AF and A-10s from throughout the TAF are the only designated forces to comprise the SAR task force. However, the problem of adequate training as a specific force package still remains and will be addressed in a later chapter.

Chapter Three

WHERE CAN THE SANDYS PLAY?

The question now becomes where might the U.S. need a rescue effort that could be handled by a SAR task force? The answer is not easy primarily because of our ever changing political climate. However, we should first look at what would make a SARTF feasible and viable. Next, we need to look at present U.S. involvement around the world where conflict is a possibility and also examine areas of interest to the U.S. which may in the future call for direct involvement.

When the combination of tactics, technology and force structure can no longer realistically counter the threat, the SAR task force will be obsolete for that environment. This situation may exist already in the European conventional war scenario and possibly other places as well. In these cases, other means of effecting a rescue must be used. However, when the threat can be dealt with, the traditional SAR task force can be used.

As history has pointed out rather convincingly, the SAR task force can be very vulnerable at times.

During the operations in connection with the Mayaguez incident, the enemy forces armed with automatic weapons, a few heavy machine guns, rocket launchers, and perhaps one mortar, destroyed four helicopters and damaged nine others---. The inherent limitations of the helicopter, slow speed and large size, made it highly vulnerable in a high threat environment (2:155).

It should be pointed out that there was very little firepower or cover support for these helicopters in the initial phase of the operation when most of the damage occurred. The principle is nonetheless still applicable. The so-called high threat environment mentioned above is minuscule compared to what could be expected in some situations and locations today. Therefore, it seems that as the threat increases, so does the need for protective firepower support in a rescue attempt, ie. Sandys. Unfortunately, there is a point where this is no longer a valid assumption: the threat simply outweighs the ability of adequate support to insure the chances for success.

The threat to a successful rescue attempt may be in many forms. Sophistication, numbers, and positions of weapons along with other factors like weather and terrain all play important roles in determining the probability of success. Tactics and specialized force structure have also been developed to help deal with these threats. Although most of the tactics used today by the SAR task force were developed and implemented in combat almost twenty-five years ago, some changes have taken place. As the threat has become more sophisticated, so have many of our counters for that threat. The tactics simply incorporate these new countermeasures. This incorporation may have complicated the SAR force tactics in some cases but simplicity is still a primary concern. Communications using jamming-resistant radios, complicate planning, but simplify tactics. Advances in technology help aircraft deal more effectively with weather and terrain.

The U.S. has approximately 40,000 military troops stationed in the Republic of Korea (R.O.K.), in addition to the many U.S. civilians working and residing there. Not only is the R.O.K. threatened by internal turmoil, but it exists daily in a state of armistice with North Korea, its militarily aggressive northern neighbor. North Korea's large standing military is positioned in an offensive posture very close to the R.O.K. border.

In the Philippines, the situation is similar. The Philippines also have their share of internal struggle. Communist insurgency appears to be growing as is the anti-American sentiment. American civilians and military personnel have been targeted for attacks.

The U.S. maintains two vital military installations in the Philippines. Thousands of U.S. personnel assigned to these installations and millions of dollars in facilities and equipment must be protected. Therefore, there is the constant threat of direct military involvement for self-defense as well as in supporting the Philippine government attempts to ensure democracy and human rights for its people.

The Republic of Korea and the Philippines are only two of the more obvious areas in which the U.S. could rapidly find itself involved in some degree of military combat operations. There may be many more.

A quarter of the world's countries are at war. Like it or not, the United States must sometimes become involved. Many of these countries are part of the larger fabric of our alliances; their fate will shape the political landscape in which we have to live (10:12).

The Middle East and Indian Ocean Region remains a bubbling cauldron of instability which threatens interruption of vital oil resources to Western democracies. In the Caribbean and Latin America, communist expansion through leftist movements continue

to threaten the geostrategic security of the U.S. southern flank. In Asia, the North-South Korean animosity threatens the security of that region. Additionally, the security of the Western world is threatened by acts of terrorism from factions such as Libya, the Palestine Liberation Organization, the Red Brigade and others (14:16,17).

The world consists of an endless succession of hot spots in which some U.S. forces could play, or could at least be imagined to play, a useful role. The belief that the mere presence of U.S. troops in Lebanon, or Central America or Africa or elsewhere could be useful in some way is not sufficient for our government to ask our troops to risk their lives. We remain ready to commit our lives, fortunes and sacred honor when the cause warrants it (12:15).

The West is on the defensive and its response cannot be halfhearted or indecisive without running grave risks. Yet there is a serious and growing gulf between the wars this nation is prepared to fight and those it is most likely to fight during the coming decades (or those that the American public and its politicians are likely to sanction).

The prospective battlefield of the next twenty years is more likely to be an urban wilderness of concrete and buildings, the tarmac of an international airport or the swamps, jungles, and deserts of the Third World than the valleys and sweeping alluvial plains of Europe.---The most plausible conflict scenario for the future is that of a continuous succession of hostage crises, peacekeeping actions, rescue missions,---or what some have called the "low frontier" of warfare (10:24). The security of the United States and the rest of the Western world requires a restructuring of our war-making capability that will place new emphasis on our ability to fight a succession of limited wars and to project power into the Third World (10:27).

The usefulness of search and rescue task forces in future conflicts will be determined by such factors as the geographic and demographic nature of the battlefield and, of course, enemy defenses (2:156).

A paradox seems to exist---between the forces developed and the most probable types of conflict to occur. DOD spending --- for conventional forces since the end of the Vietnam War have been focused on nuclear deterrence and a possible European war, which has been regarded as the least likely type of warfare to occur (14:25).

It becomes apparent that, with all the commitments which the US currently has and is likely to have in the future, military involvement is most likely to be on a scale and in an area where a SARTF could expect to operate. With this the case, our forces tasked for this mission should be trained adequately to respond rapidly and competently.

Chapter Four

ARE THE SANDYS READY?

The Sandy mission is unique and very difficult for the A-10 pilot. Although the aircraft itself is well suited for the mission, the success of that mission is greatly dependent upon the skill, knowledge, resourcefulness and training of the individual Sandy pilots. The Sandy lead most often is the on-scene commander of the SARTF and is responsible for coordinating the rescue effort in and incident to the objective area (4:2),(8:1-1). Therefore, the TAF has designed a specialized training program for those A-10 units designated to perform the Sandy mission.

The following is a summary of the training program for the specific units to use. The minimum requirements for SAR qualification are extracted from MCM 51-50, Vol. II, 30 March 1983, pg. 4-2,4-3,4-4.

A. Initial Ground Training:

- (1) Academics:
 - (a) FAC/SCAR procedures
 - (b) Search patterns and procedures
 - (c) Helicopter Escort
 - (d) Search and Rescue procedures
- (2) Simulator Training: (optional)

B. Initial Flying Training for Upgrade to SAR Wingman.

- (1) SAR-1: FAC/SCAR--Each pilot acts as a Forward Air Controller, finding, describing, and marking a target, then controlling the remaining aircraft as they expend ordnance simulating a SAR situation.
- (2) SAR-2: Helicopter Escort--Practice helicopter rendezvous and escort tactics. Practice of FAC/SCAR is desired.
- (3) SAR-3: Helicopter Escort--Same as SAR-2. IP demonstration of completion of a SAR profile may be included.
- (4) SAR-4: Electronic and Visual Search--IP demonstrated on-scene commander scenario with simulated survivors. Conduct search and simulated suppression phases of SAR. After the survivor is found using electronic and visual

means the pilot will evaluate the situation and act as on-scene commander for the simulated suppression phase.

- C. For Upgrade to SAR Flight Lead: Three continuation missions should be flown as SAR wingman prior to entry into SAR Flight Lead Upgrade Training as a minimum.
 - (1) SAR-5: Unopposed SAR--Practice a combination of SAR-3 and 4. One element will conduct the search and suppression phases while the other element escorts the helicopter. The elements should then switch roles and repeat the maneuvers.
 - (2) SAR-6: Opposed SAR--Practice procedures and tactics necessary to coordinate and control a complete SAR. The practice SARs on this mission include opposition, suppression and control of simulated strike flights.

All of these sorties except SAR-1 and 4 require 4 A-10s and helicopter assets to be scheduled to support the training. Continuation flying training will accomplish the sorties designated by the Major Command (MAJCOM). Every effort will be made to complete SAR flying training with complete SAR scenarios. These scenarios should include: (1) FAC/SCAR procedures (2) Search patterns and procedures (3) Helicopter escort (4) Search and Rescue procedures.

"It is desired that (A-10) Squadrons tasked for SAR have a minimum of six pilots trained for SAR capability" (8:3-2). This minimum would equate to a total of 48 A-10 SAR trained pilots throughout the TAF.

Although MAC and 23rd AF search and rescue assets do not have a specific requirement to train for a SAR task force mission, their participation in the support of the TAF A-10s required training is critical. Other helicopter assets can sometimes be used such as those belonging to the Air Force Reserve and Guard. Or, in some cases, other service helicopters may be used. However, because combat SAR is the responsibility of 23rd AF and it is their assets which would be called upon in a real situation, it would be more advantageous and realistic to practice and train together.

This training is sometimes scheduled on a recurring basis. However, more often the training is accomplished during larger exercises such as Team Spirit, Cope Thunder, etc.. This is especially true for continuation training where all participants are already qualified. With the increased commitments and decreased assets of 23rd AF, coordinating helicopter support for Sandy training has become more difficult. Therefore, realistic and timely training for the A-10 Sandy mission is becoming an increasing problem.

Chapter Five

CONCLUSION AND RECOMMENDATIONS

The objective of Combat Search and Rescue is to effectively employ all available resources to recover distressed personnel in a wartime or contingency environment. Thus, we preserve and return to duty critical manpower resources of the United States, deny the enemy a source of intelligence information, and contribute to the morale and mission motivation of the combat forces (4:1).

This is not mere philosophy. It is Air Force doctrine and is significant because it is essentially what the Air Force believes about warfighting and has committed itself to.

"A SAR effort is an emergency to begin with and certain calculated risks must be taken. In such cases, the risks which will provide a strong possibility of salvaging an otherwise hopeless situation with a reasonable degree of safety should be considered" (11:5). The Sandy aircraft are a formidable means of lessening the risks and increasing the degree of safety for the rescue forces in many cases. Although there do exist areas where these risks would be so great as to not warrant a SARTF, the probability of U.S. involvement in these areas is much less than it is in other, less threatening areas where the SARTF would be required. Therefore, the Sandy mission is as viable today as it has ever been.

The SAR doctrine as stated in AFM 1-1 is not simply a warfighting, militaristic view. It is, in essence, a statement about the United States of America's commitment to life and liberty and how that commitment is ever enduring even in wartime. "The Air Force promulgates and teaches this doctrine as a common frame of reference on the best way to prepare and employ aerospace forces. Accordingly, aerospace doctrine drives how the Air Force organizes, trains, equips, and sustains its forces" (3:v). Therefore, the doctrine is sound, but it requires continued emphasis to ensure that SAR can be accomplished.

SARTF forces must be available and people must be trained to execute the mission.

Probably the most important consideration for future combat rescue is that the basic knowledge required for future combat SAR is currently available. Undoubtedly, present knowledge will have to be modified, but the loss of life during past SAR missions dictates that the successful combat rescue procedures must be preserved. Extensive peacetime training programs are necessary if adequate combat rescue procedures are to be retained. Indeed, the future effectiveness of combat SAR depends on retaining the skills and knowledge gained during search and rescue operations in SEA (7:52).

It is, therefore, specifically recommended that a joint study be conducted by Tactical Air Command and Military Airlift Command on the viability and frequency for SARTF exercises and continuity training. It is also recommended that the Air Staff immediately develop a contingency plan to increase available helicopter assets to be used in a SARTF role.

Following World War II and Korea, Headquarters USAF let economic pressures rather than experience or reason determine the concept of rescue operations. After each of these conflicts, USAF ignored the lessons learned and cut rescue forces---. USAF cannot afford to let SAR deteriorate to the level it was prior to Southeast Asia. SARTF forces must be as combat ready as the units they support (13:47, 48).

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